

⊗ H_2 storage: we are delivering to a storage tank

Action Items

Dennis - late today - engr design quest

Meeting Notes to Dennis - Karina - today

Garbage Comp - Dima

Gasifier - James

Arsenic + Mercury - Karina

Engine comparison - Max (James) { fuel cell: 70%
ICE: 25-30%

Sulfur + Chlorine - Max

1/30/09

Group Meeting

Members present: Max, James, Dima

- James has article about plasma gasification of MSW

⊗ everyone needs to read

- Dima has empirical formula for MSW

⊗ talk to Dr. Rienhart @ UCF

⊗ email Dennis - which model is better

- Max has found some info on lime filtering for Cl, S

⊗ papers w/ solid #'s are needed

Action Items

⊗ Continue working on same tasks over weekend

⊗ Contact Karina about programs

2/3/09 Class Day 6.

- revised schedule for semester
- Prof. Perl will send out a companion link for text

Excel Presentation by Heather

⊗GPSA is a good tool

Alt to use menus

Importing lists in wordpad (txt) format

IF: "= IF(logical_test, value_if_true, value_if_false)"

Conditional formatting: select a column, highlight if cell is equal to something, or greater than something, etc...
- up to 3 conditions (colors)

2/4/09 Conference with Dennis 3

Present: Max, James, Karina, Dima, Dennis

- Licensed Medical Waste
 - Medical waste-textile
- use geometrical means

- 4.45 mol H_2O
- 526.96 mol H_2
- 51.41 mol N_2
- 0 mol O_2
- 646.49 mol CO
- 132.40 mol CO_2

} product of plasma jet for MSW

- 1273 K temperature of gasifier
- Model slag as glass
- 95% of contaminants will go into slag
- soot - fine particulates in product gas -
- Customary = "English" units
 - 1000 mol syngas: 25 lbs fines
 - 1-10 microns
 - baghouse or ceramic filters
 - ↳ requires cooling
 - ↳ doesn't
- Sulfur - gypsum
- halides - alumina
- mercury - } activated carbon bed? impregnated?
- arsenic - } nonregenerable mol sieve } conc. may be too low?
 (Hg may be regenerative)
- \$10/MMBtu
- \$0.10/kWh → \$0.07/kWh

Action Items

- Dina - conversion, post article + post notes
- James - size, price gasifiers
- Max - sulfur, halides, particulates
- Karina - Hg, arsenic

2/5/09 Class Day 7

Classif. info on DOE website

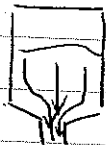
Pilot-Plant Data and the use of models in Design

Presentation by Tanya Tichel

\$250 - \$300 million to build chem plant (cellulosic ethanol)

problems if material is not uniform:

proper:



rathering



Bridging



- dangerous if you have O₂ still coming in - fine!

- Pilot plant data: kinetically limited

limited by scale

- Volume vs. SA

- Reynolds # 's

Planning a new process:

1. Determine reaction kinetics

⊗ NIST data & JANNAF tables

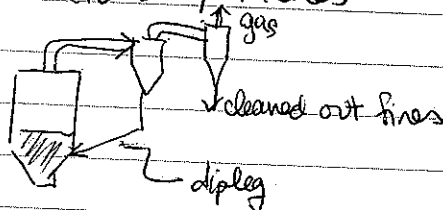
2. Pick your model: aspen, hysys, etc...

kinetics + thermo + hydrodynamics

3. Bench-scale tests (reactor diameter: inches)

4. Pilot scale tests (10's of inches)

⊗ Recycle cyclones:
works by gravity



- 132.40 mol CO₂